ELECTRON BEAM ADDRESSED ACTIVE MATRIX SPATIAL LIGHT MODULATOR

Marcial Vidal,
David K. Mutchler, and
Duane A. Haven

ABSTRACT

A spatial light modulator contains a substrate (90), a plurality of overlying liquid-crystal cells (202), a plurality of respectively corresponding transistors (204), an electron-beam system (400 and 500), and a control component (203). Each transistor is in electrical communication with the corresponding liquid-crystal cell. The electron-beam system bombards each transistor with electrons that cause it to be selectively in (i) a non-conductive condition in which its channel-region electric field is substantially insufficient for conduction or (ii) a conductive condition in which its channel-region electric field is sufficient for at least partial conduction. During selected time periods when a transistor is in its conductive condition, the control component provides the transistor with a control signal that results in the polarization direction of specified light being selectively rotated in passing through the corresponding liquid-crystal cell.